



Promoting Integrity as an Integral Dimension of Excellence in Research

Managing research integrity: An assessment of best practices from the organisational literature

DOCUMENT DESCRIPTION

Deliverable Number	D 3.9
Work Package	WP3
Task	T III.6
Type	Report
Version	final
Number of Pages	23
Due Date of Deliverable	Month 24
Actual Submission Date	09/01/2018
Dissemination Level	Public
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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 665926.

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1. Introduction

In this chapter we will identify and describe organisational best practices for handling research misconduct. By “best practices” we mean examples of beneficial practices, reactions, ways of thinking and similar that can be used for learning and inspiration. By “organisational” we broadly refer to a collective of individuals with a common purpose, in this context research organisations. This may take a variety of forms, such as universities, research departments, or even journals.

The analytical point of departure is that establishing a code of conduct or a set of principles alone is generally not enough to develop and sustain a culture of integrity; rather, they need to be integrated into research practice. This integration may be conducted through a variety of organizational means. The focus is based on the assertion that there is a lack of knowledge on how organizations can prevent misconduct and in particular how the integration of ethical principles or codes with organizational practice may be facilitated.

Our objective in this deliverable was originally to identify five examples of research organisations that have more or less successfully implemented strategies oriented towards strengthening a culture of integrity in research, publishing and management practices. The best practices were to be selected from previous work in PRINTEGER, in particular the inventory work (WP II), the survey (task IV.2) and the case studies (task III.3), as well as from relevant literature. However, in the project we have not been able to identify good case examples at the organisational level. Most of the case studies have focused on the individual level (i.e. the culprits and their behaviour), and the organisational focus has predominantly revolved around relatively unsuccessful behaviour.

Given our objective to explore organisational best practices, the present chapter therefore focuses on case examples taken from the organisational literature on integrity and misconduct. The idea to analyse good examples from other contexts with a particular eye to their relevance and suitability for research integrity and misconduct. A special objective is to assess the necessary conditions required for adopting similar practices to improve research integrity. Another objective is to describe possible further analyses in order to develop understanding and facilitate learning.

The chapter is structured as follows. In the following section, we define and operationalise research misconduct and integrity as well as our organizational “best practice” perspective. We then describe how we analysed and identified the best practices, before we in the following sections describe them in more detail, using examples from the empirical material and the literature. Finally, we conclude by evaluating the five case practices and outline potential avenues for further work.

2. Key concepts: Research misconduct, organizational integrity and “organisational best practices”

Research misconduct is often defined in terms of the abbreviations FFP (falsification, fabrication, plagiarism) and QRP (Questionable Research Practices). Where the former generally involves outright normative breaches (and are the ones we typically read about in the newspapers), the latter is more open to debate and may involve different interpretations of the normative implications of the behaviour. Whereas the former has the most public attention, the latter involves by far the most common forms of misconduct, such as selective dropping of data, non-disclosure of a conflict of interest, or not reporting on the variety of different methods, as well as questionable referencing and publishing practices.

To this end, organisational integrity involves dealing with a range of different types of disputed behaviour. It also involves dealing with potentially complex relations between questions of misconduct and other organisational or work life phenomena such as conflicts between people or parts of the organisation, different views on the components of “good” or “excellent” research, and different views on what counts as legitimate and illegitimate research behaviour. These conflicts or differences may be embedded in institutionalised cultures, practices and hierarchies. Indeed, many observers of research integrity point out how “no misconduct cases are similar”, and that each case involves a specific mixture of individual and organisational characteristics.

The literature on research misconduct and on organizational misconduct more broadly (e.g., corruption, fraud, sexual harassment, bullying) has pointed to a variety of conditions and antecedents of misconduct (Greve, Palmer, & Pozner, 2010). Some conditions are the availability of moral justifications (e.g., “everybody does it”), economic pros outweighing the cons, belief of not getting caught, and lack of knowledge or guidelines. Some causes are personal and professional stressors, organizational climate, job insecurities and work dissatisfaction (Andreoli & Lefkowitz, 2008; Davis, Riske-Morris, & Diaz, 2007).

Whereas these issues are mostly related to individuals and their decisions, an organizational perspective focuses on collectives of individuals – for examples on organizational culture, practices or identities. From this perspective, we can talk about organizational integrity, pointing to not only “the ethical integrity of the individual actors, the ethical quality of their interaction” but also to “that of the dominating norms, activities, decision making procedures and results within a given organization” (Palazzo, 2007).

What is central from an organizational perspective is the assumption that integrity can be managed. Organisational integrity is more than the sum of the integrity of its members, and not simply related to individual characteristics. Integrity cultures can thus be developed, nurtured and sustained – to a significant degree irrespective of the moral predispositions of the people involved. For instance, Paine (1994) distinguishes between a compliance strategy and an integrity strategy: Whereas the former is focused on conforming to externally imposed standards and to prevent misconduct, the latter

emphasises self-governance according to chosen normative standards and a focus on enabling responsible behaviour.

It is in this context of research integrity we can place organizational best practices. They point to practices that are assumed or documented to be superior to other practices on some comparable criteria. While identification of “best practices” in some contexts involve formal procedures – for instance in accredited management standards such as ISO 9000 – it can also be used less formally as a device for learning, as we do in this chapter. What kinds of practices can one assume to be better than other on some given criteria? What are their characteristics, antecedents, and rationale? And to what extent can these practices be applied in other contexts? These are the central questions in our “best practice” analysis.

3. How we have identified and analysed the best practices

In our search for best practices, we have relied on a hermeneutic and “reflexive” methodology (Alvesson & Sköldbberg, 2009). In adopting this approach, we have focused in identifying and highlighting particularly interesting best practices from other fields or other contexts. We have therefore not pursued a deductive approach of first identifying a broad range of practices and deducing the “best” practices among these. Rather, on the basis of our own experience as well as our theoretical curiosity, we have focused on interesting thematic areas to open for reflection and discussion. Likewise, we have not reported fully “real-life” empirical cases from the PRINTEGER project, as we originally hoped to do, but assessed empirical case as well as theoretical concepts and discussions from other areas.

In the analytical process, we first started out by discussing in the HiOA group of potential practices or theoretical or empirical areas of research that could be relevant the objective of the present chapter. We wanted some mainly empirical experiences, and also some theoretical insight. We ended up with a list of different potential avenues. We discussed these, and eventually narrowed our list down to five central themes. (The reason we ended with five is primarily due to the original task of identifying five best practices). The themes are (a) responsibility and accountability (using the new Norwegian legislation on research misconduct as a case example), (b) whistleblowing, (c) leadership practices, (d) training, and (e) openness. We describe these in the following section.

4. Five areas of best practice for the management of research integrity

4.1. Organizational responsibility and accountability – the new Norwegian legislation on research misconduct

In May 2017, a new research ethics law was enacted in Norway. The new legislation placed increased legal responsibility on research organisations (i.e. both public and

private universities and university colleges receiving public funding) to prevent and handle misconduct and to promote integrity. This was a significant change from the prior legislation, which primarily regulated the conduct of researchers through national and regional research ethics committees. As far as we know, this judicial emphasis on making the research organisations themselves accountable for research misconduct – in addition to individual researchers – is a novelty.

The research organisations' new responsibilities embedded in the judicial demands involve two elements: The first element is that the research organisations themselves have the responsibility for handling allegations of misconduct. They are to have an integrity committee, comprising of what is described as "necessary competence" in the areas research, research ethics, and law. Although many research organisations already had various form of integrity committees prior to the legislation, they are now mandatory. The legislation also includes the institute sector in Norway, which comprises smaller, independent or semi-independent research organisations doing commissioned research.

Furthermore, the research organisations are to specify procedures for treatment of possible misconduct, including the role of the integrity committee. Finally, the organisations are to communicate all handled cases of alleged or suspected misconduct to the national integrity committee. This is a crucial step in order to have a register of all cases on a national level. This is a type of knowledge which has been – and still is – a missing feature in Norway as well as internationally. A mapping of Norwegian universities conducted as part of the preparatory work also showed a great variation in how the institutions handle and prevent cases of alleged misconduct, and concluded that there is considerable room for improvement. This finding is supported by the work package on incidents in PRINTEGER (van Buggenhout, Christiaens, & Gutwirth, 2017).

The second issue is a responsibility of the research organisations to ensure that the research conducted by members of the organisation (and collaborative partners) is in accordance with "commonly recognized research ethical norms", i.e. the established ethics frameworks provided by the academic community. As part of this responsibility, the research organisations are also responsible for providing the researchers with the necessary training in and knowledge about the normative frameworks, also including the kinds of ethical challenges and dilemmas that researchers might encounter.

The preparatory work for the legislation had a strong emphasis on organisational and workplace elements of research integrity and misconduct. Among others, this emphasis involved workplace culture and mundane, day-to-day research practices: "Research ethics has to be an integrated part of the research activities. The research organisations must work actively and continuously with establishing ethical culture and practice [...]" (Proposition to the Parliament, 2015-2016: 31). More specifically, it was highlighted that a key element in the culture must be openness:

The institutions must seek to develop a culture where there is room for discussing all cases tied with ethical elements. It is necessary with an organisational culture where it is allowed to question needs for ethical

discussions related both to general research questions, to specific themes and to concrete research project and the execution of these. (p. 32)

It was especially emphasised that an important topic in these discussions was questionable research practices, i.e. ethical grey zone incidents. Discussing these kinds of activities and cases, it was argued, is important to increase the collective awareness around misconduct more broadly.

Elements highlighted in the preparatory work to develop such a culture are managerial attention, a systematic approach, training of everyone involved in research (also students), and competence of all individuals involved – also internal and private sector collaborators. It was also emphasised that research ethics must be integrated in all phases of the research activities, including planning, execution and publication.

There are several reasons why we believe the new legislation is a “best case” example – both compared to the prior legislation in Norway and to the legislations in the other countries in Europe.

First, the legislation is an important means by the government of making not only the researchers themselves (as in the prior legislation) but also the research organisations responsible and accountable for handling misconduct and preventing it. Although there is a vital punitive element in the legislation we interpret it first and foremost as a strong political signal to the research organisations to take matters related to misconduct seriously, and as a potentially inherent part of research rather than as something that is connected only with “bad people” or only loosely connected to the researchers.

Second, the legislation incorporates an organisational and workplace perspective, and thus shifts attention away from only looking at the individual researchers’ ethical responsibilities and towards integrity and misconduct as a broader social, cultural, organisational and also political phenomenon. The attention to (ethical) competence, culture and leadership are vital components in an organisational/workplace perspective. In this view, the researchers are not only regarded as individual professionals, but also as employees and co-workers –and thus that their conduct is not only steered by professional standards and codes of conduct but also by (managerial) efforts at their workplace.

Third, the legislation emphasises – at least indirectly – the importance of organisational learning. Organisational learning is a process whereby an organisation learns from its prior activities. In the context of research misconduct, learning organisation takes seriously the misconduct and engages in efforts to improve the organisational structure as part of responding to the misconduct. Especially the requirement of handling all cases internally through formal procedures and having a centralised and independent body that has information about all cases is a vital step towards learning from the misconduct cases – both in each organisation as well as more broadly.

Despite all these generally positive elements, the fact of the matter is that the legislation is still new and we do not know much about to what extent and how it has been operationalised in the research organisations. Furthermore, during the formative processes it has also been criticised. One argument has been that it treats misconduct

(FFP) as the only central element all research ethics, and thus neglects other considerations such as the research subjects and to nature and climate more broadly (Fugelsnes, 2016). Another argument has been that the legislation is not concrete enough regarding how the universities are to organise their handling of the misconduct cases, and calls for more standardisation of the organisation and the handling procedures.

To summarise, we can outline the following potential “best practices” from the new legislation:

- Legally enforced responsibility of research organisations to handle cases of alleged misconduct
- Legally enforced responsibility for research organisations to have an integrity committee, consisting of members with necessary competence.
- Legally enforced responsibility for research organisations to document information about the cases of alleged misconduct and store it at a third party such as a national ethics committee.
- Legally enforce responsibility of research organisations to keep researchers informed about research integrity through training and other measures.

4.2. Whistleblowing

Whistleblowing refers to employees who expose information or activities that are deemed illegal or unethical. Systems that open for effective whistleblowing as well as provide security and anonymity for the whistle-blowers is arguably an essential feature of building organisational integrity. Because of the hidden and sensitive nature of research misconduct, it is difficult to assess it by managers or other internal or external bodies. Hence, whistleblowing may often be the only way to obtain knowledge about research misconduct.

From the literature on whistleblowing we know that there are several key conditions that should be in place for it to function properly (Jubb, 1999; Near & Miceli, 1996). Such conditions involve:

- Possibility for employees to report incidents outside of their chain of command (e.g. outside of their direct supervisor/manager)
- Confidentiality
- A hotline or any other safe means of communication
- Formal protocols and fair working procedures for the handling of the incoming information
- Information of whistleblowing and whistleblowing procedures
- Assigning people or an organisational body with specific responsibilities for whistleblowing, such as an ombudsman or an ethics committee
- Establish and enforce a whistleblowing policy

While much attention has been directed on whistleblowing in general, both in the public and private sector, less is known about involving potential research misconduct (Mecca et al., 2014). Research is often difficult to assess by others – at least before it is

published. It may also involve many other types of activities than fabrication, falsification and plagiarism, which is typically heard about in the major scientific scandals. It may involve Questionable Research Practices (QRP) which per definition lie in ethical grey zones and where there is little knowledge or attention or little precedence about how they should be regarded and handled. It may also involve “sloppy research” which involves a mixture of ethical and quality assessments of research; it may often be difficult for peers to evaluate whether sloppiness or cutting corners should be reported.

The number of whistleblowing cases seems to be rather limited compared to the extent of research misconduct. For instance, a 2008 study of National Institutes of Health found that about two thirds of allegations of possible research misconduct observed by scientists was not reported to the Office of Research Integrity (Titus, Wells, & Rhoades, 2008). It has also been found that reporting potential research misconduct can be a stressful event, and in particular that two thirds of whistleblowers had experienced some form of negative consequences such as denial of promotion, loss of research resources or harassment (Lubalin, Ardini, & Matheson, 1995).

It is clear that research organisations have a great responsibility to enable whistleblowing and protecting the rights of the whistleblowers. Many of the best practices for research organisations are likely to be rather similar to other types of organisations, as shown above. In addition it has been argued for the importance of Research Integrity Officers (RIO) to provide knowledge and preparation to researchers about the procedures and possible outcomes of whistleblowing, in order to both heighten the number of whistleblowers and reducing the number of “unqualified” reports. This also involves improving the competence of RIO’s, for instance by discussing hypothetical cases and receiving additional training or coaching. Other best practice examples in research organisations include seeking to handle potential cases informally first.

Devine and Reaves (2016) argue that there are crucial institutional pressures against whistleblowing that must be acknowledged and addressed. These include “smokescreening” (i.e. shifting attention to the whistleblower through retaliatory investigations), threats, isolations, and blacklisting – as well as various silencing tactics such as nondisclosure agreements or “gag orders”, separating expertise from decision-making authority, restricting access to information, and preventing development of a written record. Based on a number of case studies of whistleblowers in the context of research misconduct, they argue for strategies that based on the principle of solidarity to rectify the institutional pressures. Examples of such strategies are corroboration from peers and from public agencies, and gaining media support.

At the same time whistleblowing efforts do not always end in negative consequences for the reporting individual. According to a study by Koocher and Keith-Spiegel (2010), 39% of whistleblowing incidents ended in a satisfactory way for the whistleblower. Over 40% of whistleblowers said that they felt no negative outcome.

It thus seems important to be aware of the institutional responsibilities of whistleblowing, meaning that universities and other research organisations take

seriously the reports of possible misconduct and that the researchers (or others) providing these reports are protected from possible retaliations. Helwick and McClain (2002) argue for development of policies in research institutions on and argue that they should involve (a) to whom the policy applies (e.g., faculty members, administrators, students, and others), (b) the types of misconduct it applies to, including the processes involved details of confidentiality, and protection from retaliation, and (c) specify sanctions for making a false claim.

In addition to the “traditional” whistleblowing procedures also other technologies have emerged that addresses research misconduct, organised first and foremost by and for the research community to engage in open debate about research and research publications. PubPeer.com and Bigwhitewall.com are two examples of online discussion fora where researchers freely – and anonymously – can discuss various topics related to research quality and potential misconduct.

Pubpeer aims according to themselves “to improve the quality of scientific research by enabling innovative approaches for community interaction”. The idea is that anyone can post published academic articles on the website and comment on them – i.e. like a peer review, but after the paper has become public. In this way the key professional quality control in academia – the peer review – is broadened. Bigwhitewall a broader open discussion forum aimed at service people who are “stressed, anxious, low or not coping [...] with the guidance of trained professionals”.¹ Both these types of digital discussion fora signal an increased interest in open and free discussion of research, which includes both researchers and other members of the public.

A key challenge however with such fora is that they are anonymous. A recent article in Nature describes how, since 2010, someone going by the pseudonym Clare Francis sent hundreds of e-mails to life-science journal editors, reporting of suspected misconduct.² These complaints have resulted in some retractions and corrections, but the article also mentions how editors have felt “bombarded” by her reports, “many of which, they say, lead nowhere”. Although COPE put out new guidelines on responding to anonymous whistleblowers, the Clare Francis actions have sparked intense debate on how journals editors and others should deal with anonymous allegations, which are only likely to increase in the future.

To summarise, we can specify the following best practices regarding whistleblowing systems:

- Establish strong internal systems for allowing researchers or others to report potential research misconduct.
- Establish a culture of “healthy” critique, without ending an a culture of mistrust or suspicion of colleagues’ work.
- Articulate the mechanisms involved in those systems, such as information about how cases are handled and about the protection of whistleblowers.
- Specify policies related to whistleblowing, including the rights of whistleblowers.

¹ <https://www.bigwhitewall.com/home/how-it-works.aspx#.WgRJNjBry70>

² <https://www.nature.com/news/research-ethics-3-ways-to-blow-the-whistle-1.14226>

- Provide information and education on whistleblowing and related procedures.
- Provide adequate protection to whistleblowers and to the accused.
- Support open (digital) debate among researchers and other members of the public.

4.3. Managing organisational integrity

A number of studies have been conducted on how to manage organisational integrity. For instance, Palazzo (2007) lists five central features in the literature. First, leadership is crucial for integrity because it is highly influential on the behaviour of co-workers – “employees imitate their superiors” (p. 118). Palazzo distinguishes between three forms of leadership: transformational (the influential or charismatic traits of the leader), instrumental (i.e. emphasis on strategic or task-oriented functions of the leader), and transactional (i.e. consistency in promise-keeping, fair negotiation, and acknowledgment of others’ positions). He argues that the transformational or charismatic type of leadership is most influential in terms of ethics as it reaches for followers’ core of self-understanding and values.

Other scholars distinguish between a “compliance-oriented” versus an “integrity-based” approach (Tremblay, Martineau, & Pauchant, 2017). Compliance-based approaches focus on external controls imposed on individuals by external sources such as codes of ethics, rules, procedures and monitoring/control. Integrity-based approaches emphasise the importance of internal controls such as individuals’ understanding and application of values and ethics standards in their practices and decision-making. Although some studies emphasise that these managerial approaches are not either-or but two sides of a continuum, most studies emphasise the integrity-based approach as the most effective. This corresponds with the transformational leadership style and its emphasis on (professional) identities, understandings and values.

Second, organisational climate (shared perceptions of ethical behaviour and sanctioning of unethical behaviour) also affects organisational integrity. “Shared understandings of what is right and wrong, allowed and forbidden, desirable or undesirable set the normative context in which members of an organisation interact” (Palazzo, 2007, p. 119). The organisational climate can be managed through interaction between management and employees and also through the use of stories or narratives that illustrate the organisation applies its values and norms – although the development or transformation of an organisational climate takes time.

Third, organisational structure can promote ethical or unethical behaviour – for instance in terms of rewards, performance assessment and control, and assigning power and responsibilities (James, 2000). Such structures can have perverse effects on integrity, for instance in terms of the publication system in academia which. At the same time, they can also be beneficial, to the extent that they are designed to reward and structure ethical behaviour.

Fourth, the societal environment of an organisation is also likely to influence the organisational integrity. This could be the national context of the organisation (e.g., in

countries with a low likelihood of systemic corruption), or in other context with the presence of third party enforcer (hard law) or presence of shared norms (soft law).

Fifth, scholars have also argued for the influence of networks. Researchers and other employees may be influenced by other members of their network, especially if they hold access to some resources or there are high hierarchical differences (e.g., between a professor and a student). The influence may therefore not always be inside the research organisation, but may be more distributed across the different networks that academics may engage with.

In addition to the theoretical frameworks, also more practically applicable frameworks have been developed. One importance framework was developed by OECD in the publication "Towards a Sound Integrity Framework: Instruments, Processes, Structures and Conditions for Implementation" (Maesschalck, 2008). The framework is based on the continuum between compliance orientation and integrity orientation, and consists of various methods to manage integrity, revolving around (a) determining and defining integrity, (b) guiding towards integrity, (c) monitoring integrity and (d) enforcing integrity. The four functions and the specific methods they entail are summarised in the following table:

Table 3. A classification of integrity management instruments

		Determining & defining integrity	Guiding towards integrity	Monitoring integrity	Enforcing integrity
Core	Rules-based	<ul style="list-style-type: none"> - Risk analysis - Code of conduct - Conflict of interest policy - Gifts and gratuities policy - Post employment arrangements - Structural measures (e.g. function rotation) 	<ul style="list-style-type: none"> - Rules-based integrity training - Oath, signing an "integrity declaration" - Advice, counselling 	<ul style="list-style-type: none"> - Whistle-blowing policies - complaints policies - Inspections - Integrity testing - Early warning systems - Systematic registration of complaints, investigations, etc. - Survey-measurement of integrity violations and organisational climate 	<ul style="list-style-type: none"> - Formal sanctions - Procedure for handling integrity violations
	Values-based	<ul style="list-style-type: none"> - Analysis of ethical dilemmas - Consultation of staff and stakeholders - Code of ethics - Non-written standard setting 	<ul style="list-style-type: none"> - Values-based integrity training - Integrating integrity in the regular discourse (e.g. announcing the integrity policy through channels of internal and external communication) - Exemplary behaviour by management - Coaching and counselling for integrity 	<ul style="list-style-type: none"> - Survey measures of integrity dilemmas - Informal probing for ethical dilemmas and issues among staff 	<ul style="list-style-type: none"> - Informal sanctions
Complementary		<ul style="list-style-type: none"> - Assessing the fairness of reward and promotion systems - Appropriate procedures for procurement, contract management and payment - Measures in personnel management (e.g. integrity as criterion for selection, evaluation and career promotion) -- Measures in financial management (e.g. 'double key', financial control,) - Measures in information management (e.g. protecting automated databases) - Measures in quality management (e.g. reviewing the quality assessment tool) 		<ul style="list-style-type: none"> Internal control and audit, External control and audit 	

Figure 1: List of integrity management methods (OECD 2009: 28)

The OECD integrity framework has also been criticised. According to Tremblay et al. (2017), one line of criticism has highlighted the lack of instruments available to strike an ideal compliance-integrity balance, or a balance on some principal norms or standards. This has arguably led organisations to strike their own balances based on their own ethical interpretations – often with limited consideration regarding their effect. Another central criticism by Tremblay et al. is a focus on individual behaviours and hence limited emphasis on organisational or organised behaviour, a focus on external regulation and hence limited focus on members’ intrinsic motivation, and a lack of focus on the complex nature of organisational integrity itself, such as differing institutional expectations of integrity.

Another framework has been developed by Anthony D. Molina in a publication by the IBM Center for the business of government (Molina, 2016). Based on studies of four public and private health care organisations, he has developed ten recommendations for managing organisational integrity. The recommendations are as follows:

1. Balance emphasis on rules and sanctions (compliance-based tools) with a values-based approach. The concrete balancing depends on the situation and the context, so the idea is to undertake an ongoing discussion of the right balance.
2. Ensure that all members of the organisation understand that they have a responsibility to promote integrity. Rather than responsibilities for integrity being abstract or spread out over a number of people, it is important to make sure that employees understand that they have a personal obligation to uphold the integrity of the organisation.
3. Implement integrity initiatives in terms of concrete behaviours. Organisations should be as specific as possible about what is meant by the expected values and behaviours.
4. Explicitly incorporate values into decision-making process. This means defining and articulating central values, and ensuring that they are central in decision-making at different levels of the organisation. For instance, projects should be able to specifically articulate how they relate to/incorporate the values of the organisation.
5. Provide ongoing training for integrity-related practices. New members need to receive adequate information and training in values and expectations, but training should also more experienced personnel. Training should be undertaken regularly, and involve different pedagogical tools.
6. Ensure alignment of the formal and informal elements of organizational culture. The formal systems involve mission and values, recruitment procedures, general policies, training, etc., whereas the informal systems involve norms, status hierarchies, and discourse/language.
7. Facilitate open communication about integrity-related issues and recognize and reward ethical conduct. It is important to enable employees to talk freely about issues related to integrity, for instance to discuss difficult/questionable practices. There should be a variety of channels for communication, not within vertical hierarchies. Organizations should also communicate expectations and discuss concerns with external stakeholders. It should also be communicated that ethical behaviour is values, and it should be rewarded and celebrated.
8. Provide a mechanism for members to consult about integrity-related issues. Members must be allowed to report alleged wrongdoing in a confidential manner, but the mechanism should also be more general and provide opportunities to consult with designated individuals when they feel that have encountered a difficult issue.
9. Conduct systemic integrity risk assessment on an ongoing basis. Risk assessment involves analysing the likelihood of ethical breaches in the organisation. It should be routinely practiced so that management may have an overview of areas where more focus on integrity issues are needed. This includes regularly reinforcing and

reviewing integrity policies, and surveying middle managers and frontline personnel about their areas of concern.

10. Ensure that performance management systems are in alignment with the ethical goals of the organisation. Performance indicators should not focus on efficiency in narrow terms, but also on ethics/integrity practices. Indicators may for instance focus on employees' competence related to standards of integrity.

These recommendations capture much of what is written in the literature about how to successfully manage organisational integrity. They are not about leadership in particular, but also encompass elements from the other best practices such as training, consultation (whistleblowing), and openness and transparency. A noteworthy feature is that of performance management in the final bullet point, which highlights the need for research managers to carefully think about integrity – and perhaps research quality/excellence more broadly – as an intended output of such mechanisms, not just quantifiable measures.

4.4. Training

Training is a central means for organisations to prevent misconduct and promoting integrity in research. Training may take a variety of forms, but generally involves providing researchers and managers with knowledge about research integrity and misconduct as well as about how to handle it. It may involve informative (teacher-student) forms of pedagogy, but it may also involve more interactive and reflexive forms of pedagogy.

To understand beneficial conditions and practices for training research integrity requires a focus on not only the content of the training, but also the subjects of the training. To the best of our knowledge, no systematic efforts have been made to assess best practices of teaching methods in the field of research integrity. A first reason is that the effect of such various training measures has been debated, and there is also limited empirical data (Marusic, Wager, Utrobicic, Rothstein, & Sambunjak, 2016). A second reason may be that the field of research integrity training is heterogeneous, and that teaching content and methods are dependant on individual teachers' views and perspectives.

This section will therefore be structured around a model on ethical decision making.

According to Thomas Jones (1991) an ethical decision can roughly be divided into four phases: identification, judgement, establishment of moral intent and behavior. At each of these phases, one can make mistakes: one can fail to identify threats to one's integrity, one can make bad judgements, external forces like institutional pressure can override one's motivation to do the right thing, and one can fail in the practical aspects of doing the right thing. By breaking integrity decisions down to these phases, it becomes easier to identify the necessary functions of educational tools. How can we help researchers identify situations where their integrity is in play? How can we help them make better judgements about integrity? How can we help them when it comes to having the proper

motivations? And how can we help them with the practical sides of making good decisions?

The first element in the decision-making process is *identification*. Any measure oriented towards making researchers better at making good judgements are ineffective if the researchers do not realize that such judgements are necessary in a given situation. How can we help researchers identify such situations? Theoretical knowledge is essential here. If the researcher in question do not know what fabrication, falsification or plagiarism is, or what research practices would be considered questionable, no consideration of integrity would take place.

Theoretical knowledge alone would not necessarily be enough however. Social psychological research show that things like time-pressure and pressure from authorities can make people skip making critical judgements about what they are doing (Darley & Batson, 1973; Zimbardo, 2007). Theoretical knowledge should therefore be supplemented with training that helps one engage with the situation as one that demands integrity judgements.

According to Jones (Jones, 1991), memory and heuristics play a role in identification. Case base education might be helpful here. By learning about how other researchers have gotten into trouble, students can become better at identifying such risks in their own work environment. When they are faced with such risk, their memory of other cases might help them see the risk, and engage with the situation ethically. The more vivid and engaging these learning activities are the better. Dramatization, for example in the form of movies like the Dutch On Being a Scientist, helps students realize that integrity cases are not always clear cut, and that one can be lured into misconduct if one is not vigilant enough.

Learning about biases, like the effect of time pressure and authorities can also be helpful. Learning about psychological experiments about biases (Haidt, 2012) for example, can help one avoid such biases in one's own life (Hartman, 2013), which would make researchers better at identifying situations where integrity is at stake.

The second element is *judgement*. Judgement is the process where one figures out how to handle a problem. As with identification, judgement also requires theoretical knowledge. Research ethics and integrity is often rule-governed (Freckelton, 2016), in the form of policy documents like codes of conduct, and knowledge of these rule are therefore important for making good judgements. Knowledge of research ethical principles, and of methodology, is also important, as rules do not necessarily cover every situation in which one might find oneself. By understanding why the rules are there in the first place, one can still make good decisions in situations where the rules are inadequate guides. Judgement is a practical activity, and training oriented at strengthening the student's capacity for it should therefore be participatory, for example through discussing moral or practical dilemmas.

As with the identification phase, judgement is also threatened with biases (Kahneman, 2012). We tend to make judgements that favour ourselves, and to rationalize poor judgements when it suits our needs (Williams, 1985). Knowledge about these forces, and about ethical deliberation in general, can mitigate the risk of biases.

The third element is *motivation and intentionality*. Figuring out what the right thing to do is, through judgement, is not sufficient for actually doing it. One also needs to be motivated for doing the right thing, so that one forms an intention to act upon the judgement. Researchers are under institutional pressure to publish and be successful, and this and other concerns might trump integrity concerns. This effect can be influenced by the intensity of the question or situation (Jones, 1991). If the negative consequences of our actions are vivid and happen quickly after our actions, they will have a larger impact on our actions than if they happen somewhere we will not have to see them, sometime in the future. Showing the consequences of integrity breaches, both personal and societal, can therefore be appropriate in a course on research integrity.

Jones also emphasizes the feeling of volition and control when it comes to motivations. If a person feels that he or she is just a cog in the machine, and not in control of his or her life, there will be an increased risk of failing to act on good integrity judgements. In order to compensate for this, a teacher can strengthen the students feeling of autonomy, by showing good role models, who did the right thing in difficult circumstances.

The fourth element is the actual *behaviour*. Even if one succeeds in all the phases above, one can still fail at the practical side of doing the right thing. We can for example imagine a young researcher who after careful judgement decides to blow the whistle on his or her supervisor, where the supervisor gets rid of the evidence and accuses the whistleblower for making false accusations. Here, the young researcher tries to do the right thing, but fails at securing the integrity of his or her working environment, and puts his or her own position in danger.

Institutions can mitigate the risk of such failures, through introducing support systems like ombudsmen, routines for whistleblowing, integrity hotlines and so on, where concerned researchers can get help doing the right thing. At a research institution, education and training of researchers should be based on these systems, and teach researchers how to call upon and use them.

Finally, there are also crucial limitations to training and education. Empirical research on ethicists and philosophers, suggest that they are no more ethical than comparable groups (Schwitzgebel, 2009; Schwitzgebel & Rust, 2014), which might make one sceptical of education in research integrity. One reason why ethicists are no more ethical than others, might be that they are engaged in theoretical activity, and not in the practice of becoming a good person. In the advice presented in this deliverable the practical sides of ethical decision making has been emphasized, which should make it more efficient than the education theoretical ethicists are exposed to, but when it comes to education one should not become overreliant on it. As we have seen, people are strongly disposed towards biases and institutional pressure. One therefore needs to have a holistic approach to training. It needs to be introduced together with other integrity promoting practices. Training alone is not enough, but if it is supplemented with other tools and support systems, it can play a positive role.

4.5. Opening up research

In a culture of sharing and open discussion, it is hard to cover up deliberate misconduct. Moreover, questionable research practices that stem from a lack of understanding of quality and integrity norms will more easily be guided in the right direction when there is open exchange about the research.

Several developments in research policy are drivers for more openness in research. Among the most prominent developments, the *open science* approach is often held to include the following elements:

4.5.1. Open access

Open access refers to “the practice of providing online access to scientific information that is free of charge to the end-user and reusable” (European Commission, 2017). This refers to making scientific articles, books, etc. freely available on the internet, i.e. accessible without subscription fees. Green open access refers to making preprint versions of limited access publications available through repositories, such as organisational ones or the European OpenAire platform. Hybrid open access refers to authors paying subscription journals to make their articles freely available. Gold open access refer to authors paying non-subscription journals for making their articles freely available. Some gold open access journals publish open access articles without an author fee.

Open access to articles is not primarily a policy for avoiding misconduct, but for making sure publicly funded research indeed is available for public benefit. However, open access can be good for uncovering misconduct as it allows the research community, - as well as interested parties outside academia - more easily to gain access to research and assess the quality and validity of it.

4.5.2. Open data

According to the Open data handbook open data is ‘data that can be freely used, re-used and redistributed by anyone - subject only, at most, to the requirement to attribute and sharealike’ (<http://opendatahandbook.org/guide/en/what-is-open-data/>)

The Handbook specifies the following conditions:

- Availability and Access: the data must be available as a whole and at no more than a reasonable reproduction cost, preferably by downloading over the internet. The data must also be available in a convenient and modifiable form.
- Re-use and Redistribution: the data must be provided under terms that permit re-use and redistribution including the intermixing with other datasets.
- Universal Participation: everyone must be able to use, re-use and redistribute - there should be no discrimination against fields of endeavour or against persons or groups. For example, ‘non-commercial’ restrictions that would prevent ‘commercial’ use, or restrictions of use for certain purposes (e.g. only in education), are not allowed.

As with open access, open data is a policy primarily meant to strengthen research by making publically funded data accessible to a wide variety of research groups, public

agencies and industry. For this purpose, the EU has established the EU Open Science Cloud, which is a virtual environment to store, share and re-use data across disciplines and borders (and also the Open Data Portal). However, the practice of open data facilitates full and potentially extended peer review of any interested party, which makes falsification and fabrication in principle easy to detect. Of course, in a situation of an overload of data – as society is currently facing – this does not guarantee that misconduct will be detected. However, open data gives the possibility of facilitating scrutiny of data when needed.

4.5.3. Open research and open notebook science

Open research is research conducted in the spirit of free and open-source software. Much like open-source schemes that are built around a source code that is made public, the central theme of open research is to make clear accounts of the methodology freely available via the internet, along with any data or results extracted or derived from them. This permits a massively distributed collaboration, and one in which anyone may participate at any level of the project (https://en.wikipedia.org/wiki/Open_research)

Similar to open research is open notebook science. Open notebook science is the practice of making the entire primary record of a research project publicly available online as it is recorded. This involves placing the personal, or laboratory, notebook of the researcher online along with all raw and processed data, and any associated material, as this material is generated. The approach may be summed up by the slogan 'no insider information'. It is the logical extreme of transparent approaches to research and explicitly includes the making available of failed, less significant, and otherwise unpublished experiments; so called 'dark data'.

(https://en.wikipedia.org/wiki/Open_notebook_science)

More than open access and open data, which both can be used to detect and prevent misconduct, open research and open notebook science represents a certain normative approach to science that can be connected to a strong integrity approach, as mentioned in the introduction. Engaging in open notebook science means taking a stand on how to conduct research practice, which goes beyond traditional requirements for good research.

4.5.4. Good practices

The European Commission has embraced Open Science in its current research policy and provide a number of case studies (good practices) on their Open Science Monitor webpages

(<https://ec.europa.eu/research/openscience/index.cfm?pg=researchdata§ion=monitor>).

Rather than repeating the content of these good practices, we refer the reader to these webpages. These good practices are however characterised by being isolated practices within organisations; we have not been able to identify examples of open science as a general institutional strategy and practice.

5. Conclusions and implications

In this chapter we have elucidated different types of best practices regarding organisational integrity that we believe are particularly relevant for research integrity. Although this list is far from exhaustive, the different types of practice contribute to shed light on the need for taking a broader organisational perspective on research integrity, viewing it not only as the result of individuals and their moral predispositions, but also as the result of how research integrity is managed. The different best practices are linked with possibilities and courses for action, but also with potential challenges that need to be understood and addressed.

Although we have treated the best practices here as isolation, it is clear that they link with each other. For instance, a system of whistleblowing is connected with training/education about whistleblowing and about (ill)legitimate research conduct, as well as with a legal foundation, leadership and openness. Likewise, although we have focused on the example of the new Norwegian legislation, it becomes fully relevant insofar as it is tied with leadership practices, with forms of training and with systems of identifying possible misconduct. Hence, the best practices should be regarded as mutually beneficial practices that are necessary requirements for developing research integrity at the organisational level.

These various best practices show how the broader literature on organisational ethics and integrity is ripe with suggestions about how it should be managed. Most of these suggestions are fairly general, suggesting that most or all of them can be applied to the context of research integrity on the basis that there is little principal difference between researchers and other kinds of professional workers regarding questions of integrity and ethical behaviour. The overall message in these suggestions is the need for a focus on deliberate and systematic managerial actions to develop organisational integrity on a collective level.

At the same time, the suggestions are broad and need to be transferred and transformed from the general concept of “organisation” and into research organisations more specifically. It has been beyond the scope of this chapter to analyse the specific traits that make research organisations different from other types of organisations, and a further analysis would be required to assess more specifically (a) which of these best practices are (most) relevant for research organisations and (b) how they should be modified to fit the research organisations, and – not least – (c) how they should be implemented in the research organisations.

The final point regarding implementation is particularly important as it acknowledges that best practices are not sufficient in and of themselves, but that they are also a product of the local context in which they are used. There is, for instance, ample evidence in neo-institutional analyses of organisations (Czarniawska & Sevón, 1996) that management ideas and practices change as they are transferred between organisations and organisational contexts, depending on a range of contextual and situational factors. Hence, careful attention needs to be placed on not only the best practices, but also on the possible underlying mechanisms that affect how they are implemented and enacted.

The five best practices point to knowledge gaps and provide avenues for further research and attention. Regarding the new legislation, we still know little about how it has been implemented in the Norwegian research organisations. The literature on policy implementation tells us that policies are rarely adopted as intended, but that they are modified and adapted. It is thus likely that there will be variation in the types of organisational structures, such as the type of committees, reporting/decision-making systems, and documentation of the case handling.

Regarding whistleblowing, analyses need to be provided of how reporting systems need to be set up in order to facilitate useful critique and warning but also preventing attempts of gossiping and dishonouring colleagues. Not least knowledge is needed on the drivers and barriers of whistleblowing in the context of potential research misconduct. Whereas whistleblowing regarding FFP is likely a very useful tool, it is more complex in terms of QRP as these kinds of practices are more open to interpretation. Hence, an analysis of the relations between whistleblowing and open discussions seems warranted.

Regarding leadership practices, knowledge is needed on the type of leadership and managerial structures that facilitate research integrity. While a considerable amount of research has been done on integrity more generally, the big question is how the general managerial knowledge should be applied in the context of governing research.

Regarding training, more systematic knowledge is needed on the nature and effects of various pedagogical modes of training and education for improving researchers' knowledge about research integrity as well as how to handle it in practice. As we have indicated in this broad overview, there are numerous techniques and methods in use to develop integrity more broadly; however, we need to understand how such knowledge can be applied in the context of research integrity.

Finally, regarding efforts of opening up science, we need to understand how the policy efforts impact researchers and also how the policies can be implemented most successfully. For instance, how do the policies relate to, and possibly clash with, different measurement systems across academia which do not take open science into account?

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